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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LEE, JINHEE J

ART UNIT	PAPER NUMBER
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2831

DATE MAILED: 09/04/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/725,836

Applicant(s)

SUN ET AL. 

Examiner

Jinhee J Lee

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Drawings

1. The corrected or substitute drawings were received on 7/8/02. These drawings have addressed all of the examiner's objections, however, the objections on the Notice of Draftsperson's Patent Drawing Review on Form 948 attached to paper number 3 still requires correction.

Claim Objections

2. Claim 16 is objected to because of the following informalities:

Claim 16 line 1, the phrase "to claim 1, the ribbon hinge structure further including:" has grammatical error. Examiner suggests "to claim 1, wherein the ribbon hinge structure further includes:" instead to correct the grammatical error.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 5, 9, 10, 15-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the electrical conduction material" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "the electrical conductive material" in lines 3-4. There is insufficient antecedent basis for this limitation in the claim. This limitation is also stated in claim 10 lines 3-4, claim 17 line 2 and claim 18 line 2..

Claim 15 recites the limitation "the out-of-plane device" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 15 recites the limitation "the horizontal plane" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 16 recites the limitation "the out-of-plane micro-device" in line 9 and in line 10. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Dhuler et al. (5962949).

Re claim 1, Dhuler et al. discloses a hinge comprising: a silicon-on-insulator wafer including a bottom substrate layer, a middle buried oxide layer and a single crystal silicon device layer (column 10 lines 46-52 according to the numbering in the middle); a ribbon hinge structure (52,54) formed in the device layer of the silicon-on-insulator wafer, wherein the ribbon hinge structure is flexible and capable of movement out of the plane of the device layer; and an electrical conductor (56) carried on at least a portion of a surface of the ribbon hinge structure(see figures 4 and 5).

Re claim 2, Dhuler et al. discloses a hinge wherein a micro-device (16 figure 1A) is fabricated from at least a portion of the silicon-on-insulator wafer which has an initial uniform device layer thickness (see column 10 lines 46-52).

Re claim 3, Dhuler et al. discloses a hinge wherein the ribbon hinge structure is configured with a mechanical integrity which permits application of a side-twisting mechanical torque sufficient to twist the ribbon hinge structure to 90° or more from an initial 0° twisted position (XY and Z directions, see abstract).

Re claim 4, Dhuler et al. discloses a hinge wherein the ribbon hinge structure has at least one of a width or thickness which is less than at least one of a width or thickness of the micro-device (see figure 4).

Re claim 5, Dhuler et al. discloses a hinge wherein the ribbon structure has at least one of (i) an isolation region formed within the ribbon structure, and within which is deposited the electrical conduction material, or (ii) an area of insulation material which has been deposited and then patterned on the ribbon structure, wherein conductors can then be placed on top of the insulation material (see figure 4).

Re claim 16, Dhuler et al. discloses a hinge wherein the ribbon hinge structure includes an anchor portion (34 for example) holding one end of the ribbon hinge in a secure position and the ribbon hinge structure configured with a mechanical integrity which permits application of a side-twisting mechanical torque sufficient to twist the ribbon hinge structure to 90° or more from an initial 0° twisted position (XY and Z directions, see abstract). The recitation that the anchor portion is formed with an isolation groove, within which is deposited the isolation region of the anchor portion, and

an isolation region formed within the ribbon hinge, and within which is deposited the electrical conductive material has not been given patentable weight because the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Allowable Subject Matter

7. Claims 6-8 and 11-14 are allowed.
8. Claims 9, 10 and 15, 17 and 18, would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter: The primary reason for the indication of the allowability of claims 6-15, 17-18 is the inclusion therein, in combination as currently claimed, of the limitation of a ribbon hinge formed on the device layer, the ribbon structure having been thinned to a thickness which is less than the thickness of the micro-device; a connection interface providing a connection point between a first end of the out-of-plane device and a first end of the ribbon hinge; and an electrical conductor material extending along the ribbon structure toward the micro-device. This limitation is found in claims 6-15, 17-18 and is neither disclosed nor taught by the prior art of record, alone or in combination.

Response to Arguments

10. Applicant's arguments filed 7/8/02 have been fully considered but they are not persuasive.

In response to applicant's argument that the device of Dhuler et al. would not operate in the intended manner of the applicant's device, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

In response to applicant's argument that the device of Dhuler et al. does not address "twisting mechanical torque", examiner disagrees. Ability of movement in X, Y and especially Z position notes the device's ability for "twisting mechanical torque".

In response to applicant's argument that the device of Dhuler et al. does not teach a "hinge structure has at least one of a width or thickness which is less than at least one of a width or thickness of the micro-device", examiner disagrees. Figure 4 shows the thickness of the hinge structure (especially at the portion near 16c) as less than the thickness of the micro-device.

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jinhee J Lee whose telephone number is 703-306-0154. The examiner can normally be reached on Monday-Thursday 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-1341 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

jji

August 29, 2002

Dean A. Reichard 8/30/02
DEAN A. REICHARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800